

Sub
C1

1. (Currently Amended) A suspension damper comprising:

a cylinder defining a cavity being substantially filled with a fluid;

a piston slidably positioned in the cylinder separating the cavity into a compression chamber and an extension chamber;

a rod coupled to the piston and extending through one of the chambers and exiting the cavity;

a tapered interface between the rod and the piston to thereby align the rod relative to the piston;

a passage through which the fluid moves between the extension chamber and the compression chamber during sliding of the piston in the cylinder; and

an air pressure actuated control valve assembly responsive to an air pressure input for adjustment to and between a plurality of an open position, a closed position, and at least one position intermediate the open and closed positions to control the movement of fluid in the passage between the extension and compression chambers;

wherein a damping force of the suspension damper is a function of the air pressure input;

wherein the tapered interface provides a fluid tight seal.

Al

2. (Original) The suspension damper of claim 1 wherein the tapered interface further comprises:

a shoulder on a portion of the rod; and

a confronting surface on a portion of the piston proximate the shoulder.

C1
cont

3. (Original) A suspension damper comprising:

a1

- a cylinder defining a cavity being substantially filled with a fluid;
- a piston slidably positioned in the cylinder separating the cavity into a compression chamber and an extension chamber;
- a rod coupled to the piston and extending through one of the chambers and exiting the cavity;
- a resistance welded interface between the rod and the piston;
- a passage through which the fluid moves between the extension chamber and the compression chamber during sliding of the piston in the cylinder; and
- an air pressure actuated control valve assembly responsive to an air pressure input for adjustment to and between a plurality of positions to control the movement of fluid in the passage between the extension and compression chambers;

wherein a damping force of the suspension damper is a function of the air pressure input;

wherein the resistance welded interface provides a fluid tight seal.

4. (Original) The suspension damper of claim 3 wherein the resistance well interface is tapered.

5. (Original) A suspension damper comprising:

- a cylinder defining a cavity being substantially filled with a fluid;
- a piston slidably positioned in the cylinder separating the cavity into a compression chamber and an extension chamber;

CI
cont

a rod coupled to the piston and extending through one of the chambers and exiting the cavity;

a threaded interface between the rod and the piston;

a snap ring proximate the threaded interface to align the rod relative the piston;

Q1

a passage through which the fluid moves between the extension chamber and the compression chamber during sliding of the piston in the cylinder;

an air pressure actuated control valve assembly responsive to an air pressure input for adjustment to and between a plurality of positions to control the movement of fluid in the passage between the extension and compression chambers;

wherein a damping force of the suspension damper is a function of the air pressure input; and

a sealant at the threaded interface to provide a fluid tight seal between the rod and the piston.

6. (Original) A suspension system for a vehicle comprising:

a pneumatic suspension sub-system selected from at least one of the following: a vehicle air-suspension system and a vehicle air-leveling system, the pneumatic suspension sub-system generating an air pressure value as a function of a weight of the vehicle and a condition of the road on which the vehicle travels;

at least one damper comprising:

(a) a cylinder defining a cavity being substantially filled with a fluid;

CI
cont

(b) a piston slidably positioned in the cylinder separating the cavity into a compression chamber and an extension chamber;

(c) a rod coupled to the piston and extending through one of the chambers and exiting the cavity;

(d) an interface between the rod and the piston to thereby provide a fluid tight seal;

A

(e) a passage through which the fluid moves between the extension chamber and the compression chamber during sliding of the piston in the cylinder; and

(f) an air pressure actuated control valve assembly responsive to an air pressure input for adjustment to and between a plurality of positions to control the movement of fluid in the passage between the extension and compression chambers;

wherein a damping force of the suspension damper is a function of the air pressure input.

7. (Original) The suspension system of claim 6 wherein the interface between the rod and the piston further comprises:

a tapered interface region between the rod and the piston to thereby align the rod relative to the piston and provide the fluid tight seal.

8. (Original) The suspension system of claim 7 wherein the tapered interface region further comprises:

a shoulder on a portion of the rod; and

a confronting surface on a portion of the piston proximate the shoulder.

9. (Original) The suspension system of claim 6 wherein the interface between the rod and the piston further comprises:

a resistance weld between the rod and the piston.

10. (Currently Amended) A suspension system for a vehicle comprising:

a pneumatic suspension sub-system selected from at least one of the following: a vehicle air-suspension system and a vehicle air-leveling system, the pneumatic suspension sub-system generating an air pressure value as a function of a weight of the vehicle and a condition of the road on which the vehicle travels;

at least one damper comprising:

(a) a cylinder defining a cavity being substantially filled with a fluid;

(b) a piston slidably positioned in the cylinder separating the cavity into a compression chamber and an extension chamber;

(c) a rod coupled to the piston and extending through one of the chambers and exiting the cavity;

(d) an interface between the rod and the piston to thereby provide a fluid tight seal;

~~The suspension system of claim 6 wherein the interface between the rod and the piston further comprises:~~ includes a threaded coupling between the rod and the piston;

a snap ring proximate the threaded coupling to align the rod relative the piston; and

a sealant at the threaded coupling to provide the fluid tight seal
between the rod and the piston;

(e) a passage through which the fluid moves between the
extension chamber and the compression chamber during sliding of the piston in the
cylinder; and

(f) an air pressure actuated control valve assembly responsive to
an air pressure input for adjustment to and between a plurality of positions to
control the movement of fluid in the passage between the extension and
compression chamber;

wherein a damping force of the suspension damper is a function of the
air pressure input.

11. (Currently Amended) A suspension damper comprising:

a cylinder defining a cavity being substantially filled with a fluid;

a piston assembly slidably positioned in the cylinder separating the cavity
into a compression chamber and an extension chamber;

a rod coupled to the piston assembly and extending through one of the
chambers and exiting the cavity;

a passage through which the fluid moves between the extension chamber
and the compression chamber during sliding of the piston assembly in the cylinder;

an air pressure actuated control valve assembly responsive to an air
pressure input for adjustment to and between a plurality of an open position, a closed

C1 cont
position, and at least one position intermediate the open and closed positions to control the movement of fluid in the passage between the extension and compression chambers;

Q1
wherein a damping force of the suspension damper is a function of the air pressure input; and

a uni-directional seal plate mounted in the piston assembly and in communication with the air pressure actuated control valve assembly;

wherein the uni-directional seal plate is adapted for mounting in the piston assembly in a predetermined orientation.

12. (Original) The damper of claim 11 wherein the uni-directional seal plate further comprises:

a step extending around a perimeter thereof.

13. (Currently Amended) A suspension damper comprising:

a cylinder defining a cavity being substantially filled with a fluid;

a piston assembly slidably positioned in the cylinder separating the cavity into a compression chamber and an extension chamber;

a rod coupled to the piston assembly and extending through one of the chambers and exiting the cavity;

a passage through which the fluid moves between the extension chamber and the compression chamber during sliding of the piston assembly in the cylinder;

an air pressure actuated control valve assembly responsive to an air pressure input for adjustment to and between a plurality of positions to control the movement of fluid in the passage between the extension and compression chambers;

wherein a damping force of the suspension damper is a function of the air pressure input; and

a uni-directional seal plate mounted in the piston assembly and in communication with the air pressure actuated control valve assembly;

wherein the uni-directional seal plate is adapted for mounting in the piston assembly in a predetermined orientation and includes a step extending around a perimeter thereof;

~~The damper of claim 12 wherein the piston assembly further comprises:~~ includes a piston adapter having an annular lip crimped onto the step of the uni-directional seal plate.

14. (Original) A suspension damper comprising:

a cylinder defining a cavity being substantially filled with a fluid;

a piston assembly slidably positioned in the cylinder separating the cavity into a compression chamber and an extension chamber;

a rod coupled to the piston assembly and extending through one of the chambers and exiting the cavity;

a passage through which the fluid moves between the extension chamber and the compression chamber during sliding of the piston assembly in the cylinder;

an air pressure actuated control valve assembly responsive to an air pressure input for adjustment to and between a plurality of positions to control the movement of fluid in the passage between the extension and compression chambers;

wherein a damping force of the suspension damper is a function of the air pressure;

a piston adapter having an annular lip crimped onto a portion of the air pressure actuated control valve assembly.

15. (Original) A suspension damper comprising:

a cylinder defining a cavity being substantially filled with a fluid;

a piston assembly slidably positioned in the cylinder separating the cavity into a compression chamber and an extension chamber;

a rod coupled to the piston assembly and extending through one of the chambers and exiting the cavity;

a passage through which the fluid moves between the extension chamber and the compression chamber during sliding of the piston assembly in the cylinder;

an air pressure actuated control valve assembly responsive to an air pressure input for adjustment to and between a plurality of positions to control the movement of fluid in the passage between the extension and compression chambers;

wherein a damping force of the suspension damper is a function of the air pressure;

C1
cont

a biasing member urging the air pressure actuated control valve assembly toward a closed position;

a retainer coupled to the biasing member to thereby secure the retainer relative to the biasing member.

A'

16. (Original) The suspension damper of claim 15 wherein the biasing member is a spring.

17. (Original) The suspension damper of claim 15 wherein a portion of the suspension damper is deformed during assembly thereof to capture the retainer.

18. (New) A suspension damper comprising:

a cylinder defining a cavity being substantially filled with a fluid;

a piston slidably positioned in the cylinder separating the cavity into a compression chamber and an extension chamber;

A2

a rod coupled to the piston and extending through one of the chambers and exiting the cavity;

a tapered interface between the rod and the piston to thereby align the rod relative to the piston, the tapered interface comprising a frustoconical section formed on an outer surface of the rod and having an axis of revolution extending along a direction parallel to a longitudinal axis of the rod;

CI
cont

a passage through which the fluid moves between the extension chamber and the compression chamber during sliding of the piston in the cylinder; and

an air pressure actuated control valve assembly responsive to an air pressure input for adjustment to and between a plurality of positions to control the movement of fluid in the passage between the extension and compression chambers;

AD

wherein a damping force of the suspension damper is a function of the air pressure input;

wherein the tapered interface provides a fluid tight seal.